

Curriculum for the Engineering for Developing Communities Emphasis
within the Professional Master of Science Degree Program in Civil Engineering
3/11/2016

The Professional Master of Science degree program in Civil Engineering is considered a terminal degree, meaning that it is intended for students who do not intend to continue on to earn a PhD degree. The Engineering for Developing Communities (EDC) emphasis within the MS degree requires 30 credits to graduate and is a courses-only program (no thesis or report required). **Professional masters program students are charged tuition at the “Professional Masters” rate shown on the Bursar’s Tuition and Fees website (<https://bursar.colorado.edu/tuition-fees/tuition-and-fees-rate-sheets/>) and are not eligible for tuition-bearing appointments (Teaching or Research Assistantships).** Since the degree conferred by this program is a graduate degree in Civil Engineering, students must meet pre-requisites for admission into the Department of Civil, Environmental, and Architectural Engineering (CEAE) and earn at least 15 credits from coursework offered by CEAE. Standard CU Graduate School minimum requirements also apply.

Required pre-requisites for entry into the professional degree program in EDC include:

- Minimum 3.00 GPA average for all undergraduate coursework
- Completion of a four-year bachelor’s degree
- Proof of English proficiency if native language is not English, as demonstrated by submission of a TOEFL score of 600 (paper-based) or 100 (internet-based) or an IELTS score of 7 or above
- Math (four semesters) including Calculus, Linear Algebra, and Differential Equations; equivalents of APPM 1350, APPM 1360, APPM 2350, and APPM 2360 (CEAE department requirement)
- Physics (two semesters); equivalents of PHYS 1110, PHYS 1120/1140 (laboratory)
- Analytical Mechanics or “Statics” (one semester); equivalent of CVEN 2121
- Fluid Mechanics (one semester); equivalent of CVEN 3313
- Prior work experience in a developing community, whether that is as a student or professional, is preferred. Experience should be described within the student’s statement of purpose in the application.

The Professional Master of Science with an EDC emphasis combines a specialized curriculum in global development theory and practice with competency in the professional skills needed by individuals who wish to work in the field of engineering for development.

I. Required core courses (12 credits)

CVEN 5919 Sustainable Community Development 1 (fall only)
CVEN 5929 Sustainable Community Development 2 (spring only)
CVEN 5939 Sustainable Community Development Practicum
ATLS 5250 Fieldwork Methods (spring only)

II. Required competency areas (9 credits: one course from each area labeled A, B, and C below)

The following list is illustrative of the types of courses that are available to professional masters students. Equivalent options may be available.

A. Data Analysis (3 credits)

1. CVEN 5454 Statistical Methods for Natural and Engineered Systems (spring only)
2. EMEN 5005 Introduction to Applied Statistical Methods
3. ENVS 5120 Topics in Quantitative Methods (topics vary)
4. JOUR 7051 Qualitative Research Methods in Mass Communication (fall only)
5. SOCY 6121 Qualitative Methods (fall only)

B. Systems (3 credits)

1. CVEN 5147 Civil Engineering Systems (fall only)

2. CVEN 5393 Water Resources System and Management (spring only)
3. CVEN 5565 Life-Cycle Engineering of Civil Infrastructure Systems (spring only)
4. CVEN 5837 A Systems Approach to Global Engineering

C. Project Management (3 credits)

1. EMEN 5030 Project Management

III. Option Area (9 credits of elective courses in a coherent topic area, selected in conjunction with faculty advisor)

The following list is illustrative of the types of courses that are available to professional masters students.

1. Environmental Health

- a. CVEN 5969 Water, Sanitation, & Hygiene (fall only)
- b. CVEN 5554 Fundamentals of Air Quality Management
- c. CVEN 5594 Water Reuse and Reclamation
- d. CVEN 5544 Solid Waste Management and Resource Recovery
- e. ENVS 5830 /ATOC 5000 Critical Issues in Climate and the Environment
- f. GEOG 5842 Global Health

2. Construction

- a. CVEN 5276 Engineering Risk and Decision Analysis
- b. CVEN 5286 Design Construction Operations
- c. CVEN 5836 Special Topics: Construction Engineering and Management Fundamentals

3. Energy

- a. MCEN 5032 Sustainable Energy
- b. ENST 5000 Energy Systems and Technologies
- c. ENST 5001 Renewable Energy Policy
- d. ENST 5002 The Business of Renewable Energy

4. Engineering Management

- a. EMEN 5010 Introduction to Engineering Management
- b. EMEN 5020 Finance and Accounting for Engineering Managers
- c. EMEN 5050 Authentic Leadership
- d. EMEN 5080 Ethical Decision Making in Engineering Management (spring only)
- e. CVEN 5346 Managing Projects & Organizations

Additional possibilities with coursework options to be finalized...

5. Policy Issues in Development

- a. ENVS 4027 Inequality, Democracy, and the Environment
- b. ENVS 5000 Policy, Science, and the Environment
- c. Additional course from CU Boulder or elsewhere selected in conjunction with advisor

6. Entrepreneurship

- a. EMEN 4200 Engineering & Entrepreneurship for the Developing World
- b. EMEN 4825 Entrepreneurial Business Plan Preparation
- c. Additional course from CU Boulder or elsewhere selected in conjunction with advisor

7. Information and Communication Technologies for Development

- a. ATLS 5230 Case Studies in Information and Communication Technology for Development (fall only)
- b. Additional courses from CU Boulder or elsewhere selected in conjunction with advisor

Additional Policies Relevant to this Degree Program

The Department of Civil, Environmental, and Architectural Engineering (CEAE) offers graduate degrees in civil engineering, environmental engineering, and architectural engineering. The departmental rules governing these degrees derive from the Graduate School Rules of the University of Colorado Boulder, available at <http://www.colorado.edu/GraduateSchool/policies><http://www.colorado.edu/GraduateSchool/policies>. In particular, Article II of the Graduate School Rules, entitled Graduate Education, describes the general policies for all graduate degrees offered on the Boulder campus and represent the minimum requirements for departmental programs. This document describes the variations from, and additional requirements to, the general Graduate School Rules for all graduate degrees offered by CEAE.

The following variations and additions apply to CEAE:

Admissions

Students are admitted to a particular specialty area of study. These specialty areas are also known as disciplines, interdisciplinary areas, or subplans of the degree programs and are described on the CEAE website. Each specialty area within the Department may have its own set of additional requirements for admission, especially in defining the prerequisite undergraduate coursework. **If a student wishes to change a specialty area, the student must receive the written permission of the Graduate Committee.**

Course Requirements

For CEAE masters degrees, a maximum of 6 semester hours of non-AREN/CVEN course work may be completed at the 4000 level. All other course work must be at the 5000 level or higher.

Grades and Quality of Work

The following variations and additions apply to CEAE:

- Courses in which grades of C (2.0) or C+ (2.3) are received are only accepted for masters degrees with the approval of the advisor.
- Courses taken to remove academic deficiencies may not be taken on a pass/fail basis.

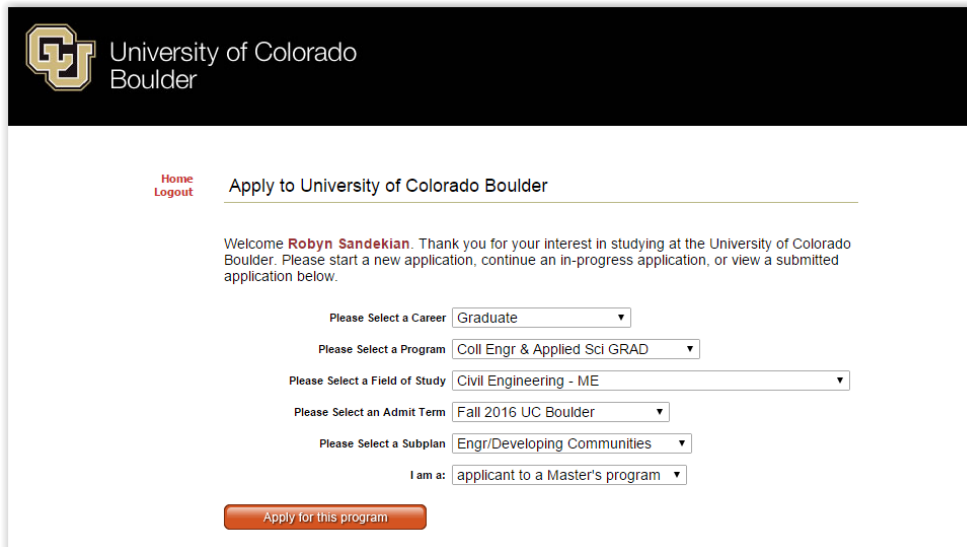
For more information about the professional MS degree program specializing on Engineering for Developing Communities, please contact:

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To apply for the professional masters (non-research) graduate degree program with an EDC emphasis, go to the Graduate Admissions Application Website at

https://soa.prod.cu.edu/degreeprog/applyDEGREEPROG_CUBLD/getWelcomePage.action

Login using the credentials provided to you by the University of Colorado Boulder.



The screenshot shows the University of Colorado Boulder Graduate Admissions Application Website. The header includes the University of Colorado Boulder logo and name. Below the header, there are links for "Home" and "Logout". The main heading is "Apply to University of Colorado Boulder". A welcome message for Robyn Sandekian is displayed, followed by a form to select application details. The form includes dropdown menus for "Please Select a Career" (Graduate), "Please Select a Program" (Coll Engr & Applied Sci GRAD), "Please Select a Field of Study" (Civil Engineering - ME), "Please Select an Admit Term" (Fall 2016 UC Boulder), "Please Select a Subplan" (Engr/Developing Communities), and "I am a:" (applicant to a Master's program). An orange button labeled "Apply for this program" is at the bottom of the form.

Select a Career: Graduate

Select a Program: Coll Engr & Applied Sci GRAD

Select a Field of Study: Civil Engineering – ME

Select an Admit Term: Fall 2016 UC Boulder

Select a Subplan: Engr/Developing Communities

I am a: applicant to a Masters program

Then click “Apply for this Program”